DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY
MAIL STOP, #82
LESTER, PA 19113-2090

IN REPLY REFER TO
5090
Ser 2436/1821/JLC

MAR 27 1995

MEMORANDUM

FOR THE MEMBERS OF THE TECHNICAL REVIEW COMMITTEE (TRC) FOR THE INSTALLATION RESTORATION PROGRAM AT NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP) BETHPAGE, NEW YORK

Enclosed is the Navy's Final Report regarding the results of the offsite residential sampling effort which was conducted during November 1994. This Final Report has incorporated comments from the New York State Department of Health (NYSDOH) as well as the New York State Department of Environmental Conservation (NYSDEC). Both agencies have generally accepted the conclusions presented within the report.

This sampling effort was conducted at the request of the NYSDOH and because of general community concerns raised during the public meeting held on November 15, 1994.

Based upon the results of the report, a joint Navy and New York Department of Health Fact Sheet will be prepared and distributed to the community residents whose properties were sampled.

If you have any questions regarding the report, please give me a call at (610) 595-0567, extension 163.

Sincerely,

James L. Colter

JAMES L. COLTER
Remedial Project Manager
by direction of the Commanding Officer

Distribution:
Bethpage Water District, John Molloy
DLA/DPRO, Abe Kern (2 copies)
Geraghty and Miller, Carlo San Giovanni
Grumman Aerospace Corporation, John Ohlmann
Nassau County Health Department, Laurie Lutzker
Naval Air Systems Command, Robert Booth
NYSDEC, John Barnes
~~EPA Region II, Carol Stein~~
EPA Region II, Mary Logan

275032

OFFSITE SOIL SAMPLING
AND PCB ANALYSIS REPORT
NWIRP BETHPAGE, NEW YORK - CTO 0089

INTRODUCTION

The Northern Division of the Naval Facilities Engineering Command has issued Contract Task Order (CTO) 0089 to Halliburton NUS Corporation, under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62472-90-D-1298 to perform Remedial Investigation and Feasibility Study for the Naval Weapons Industrial Reserve Plant (NWIRP), located in Bethpage, New York. As part of the investigations, the Navy has recently completed offsite soil testing to determine if contamination from the Navy's Site 1 has migrated off site.

INVESTIGATIVE PROCEDURE

The offsite investigation consisted of collecting surface soil samples in the residential neighborhood (numbered streets) bordering the eastern portion of the Navy's property and analyzing the samples for PCBs. These samples were collected on November 16 and 17, 1994. New York State and Nassau County Departments of Health were present during the sampling. A total of 17 surface soil samples (including duplicates) were collected from 15 locations in and near the residential neighborhood. The testing consisted of sampling eleven residential properties near the NWIRP Bethpage's Site 1, two areas on an industrial property adjacent to the Navy recharge basins, one area at the Bethpage Community Park, and one area at a playground on Meade Avenue near 5th Street, (See Figure 1).

The sample locations were initially selected based on the proximity to the Navy property and potential wind dispersion patterns. The actual sample locations were modified in the field based on the ability to obtain homeowners permission, and in one case a planned sample location was moved because of the recent residential application of a pesticide to a lawn.

As indicated in Figure 1, the most extensive sampling was conducted nearest the Navy's property and in particular nearest the Navy's Site 1. This approach was based on the assumption that if contaminated dust was leaving the Navy's property, then the lawns closest to the Navy's property would be expected to have the highest concentration. Also, a general trend of decreasing contamination with distance from the Navy's property should be observed. One sample was collected off site, east of the Navy recharge basins, because of the finding of low levels of PCBs in the recharge basin area.

In addition, three locations were selected to serve as reference points. The reference points were the Bethpage Community Park, the access road to the Navy's property located off Stewart Avenue, and a recreation area on Meade Avenue. These areas were tested because low concentrations of chemicals such as PCBs can be found in some locations due to the proximity of power transmission equipment (e.g. electric transformers).

The soil analysis was limited to PCBs for the following reasons.

* PCBs were detected in one soil sample on the Navy's property at a relatively high concentration, when considering toxicity and regulatory criteria.

* PCBs are not mobile, but are persistent in the environment remaining in surface soils for extended periods of time. Because of these properties, PCBs can also be used as an indicator to determine whether other site contaminants with similar properties (such as metals) may have migrated off site historically.

* Other site contaminants such as solvents were not tested because they would not accumulate in residential soils. The solvents (if released) would either migrate to the groundwater (and eventually be detected there) or would remain in the air and be destroyed through photochemical reactions.

The sampling procedure consisted of establishing a relatively uniform 5-point grid on each property to be tested. Where possible, preference was given to exposed soils (gardens and bare soil patches). Locations with mulch and other similar materials brought into the area was avoided. Pin flags were placed at each grid point and the pin flag locations were photographed (photographs are available in the project files). At each grid point, if present, the sod was cut and lifted back. Otherwise, only leaves and other similar debris were removed. A stainless steel trowel was used to collected soil from the sod root zone, below the root zone, and up to 6 inches below the surface. The soil was placed in a stainless steel bowl and mixed with the soil obtained from the other four grid points in each area. This composite sample was then submitted to RECRA Environmental Laboratories for PCB testing using Contract Laboratory Program Statement of Work OLM01.8 analytical and reporting protocols in accordance with Naval Energy and Environmental Support Activity Level D Quality Assurance/Quality Control (QA/QC) criteria. The data validation letter is provided in Attachment 1 and summarized in the Analytical Results section.

ANALYTICAL RESULTS

The analytical results are provided in Table 1. The testing found PCBs at detectable levels in only two of the eleven residential properties, one on 11th Street and Thomas (SS-04) and one on the northern end of 10th Street (SS-05). The PCB concentrations detected at these locations were 0.068 mg/kg and 0.120 mg/kg, respectively; which are significantly less than the level of 1.0 mg/kg established by the United States Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation for residential properties.

The sample collected on the access road, adjacent to the Navy recharge basin (SS-08), was measured to contain 3.52 mg/kg of PCBs. This access road is considered to be an industrial area. The EPA standards for PCBs in industrial soils are 10 to 25 mg/kg. For comparison, the PCB concentration in soils on the Navy's property near this location (SB229) was measured during the Remediation Investigation to be 6.8 mg/kg. Because of the similarity in onsite and offsite concentration, as well as the general concentration of PCBs detected at the Navy's property and the finding of similar levels in the industrial control point (SS-13, see below), the presence of PCBs at these locations is not believed to be the result of wind dispersion from the Navy property.

Residential and industrial background samples were collected to evaluate the potential presence of PCBs in areas likely to be unrelated to the NWIRP Bethpage activities. Two samples were collected as background samples for residential areas, one at the Bethpage Community Park near the basketball courts (SS-14), and one in the playground on Meade Avenue, near the swings (SS-15). The sample collected at the Bethpage Community Park (SS-14) was measured to contain 0.169 mg/kg of PCBs. Again, the standard for residential use of property is 1 mg/kg. The sample collected at the playground (SS-15) did not have detectable levels of PCBs. One sample was collected as a background sample for industrial areas. This sample was collected on the access road to the NWIRP, near Stewart Avenue (SS-13). This sample was measured to contain 5.0 mg/kg of PCBs. The EPA standards for PCBs in industrial soils are 10 to 25 mg/kg.

Overall, no major quality concerns were noted with the sample results. Several samples were analyzed at dilutions because of the presence of significant levels of non-target compounds. An acid cleanup was performed on all samples prior to analysis, but was only partially effective at minimizing interferences. These interferences account for the differences in detection limits reported.

CONCLUSIONS

The following conclusions were derived from this study.

* PCBs were detected in only two out of eleven residential samples and at concentrations significantly below applicable standards for a residential setting. Based on the information presently available, it can be concluded that contamination from the Navy's Site 1 has not spread into the residential community.

* There is evidence that non-target compounds are present in several of the residential properties.

* PCBs were detected at two of the three control points. However, both concentrations detected were below applicable EPA standards. In addition, the presence of PCBs in the control points may be an indication that other common sources, such as power transmission equipment, could be the source of these detections.

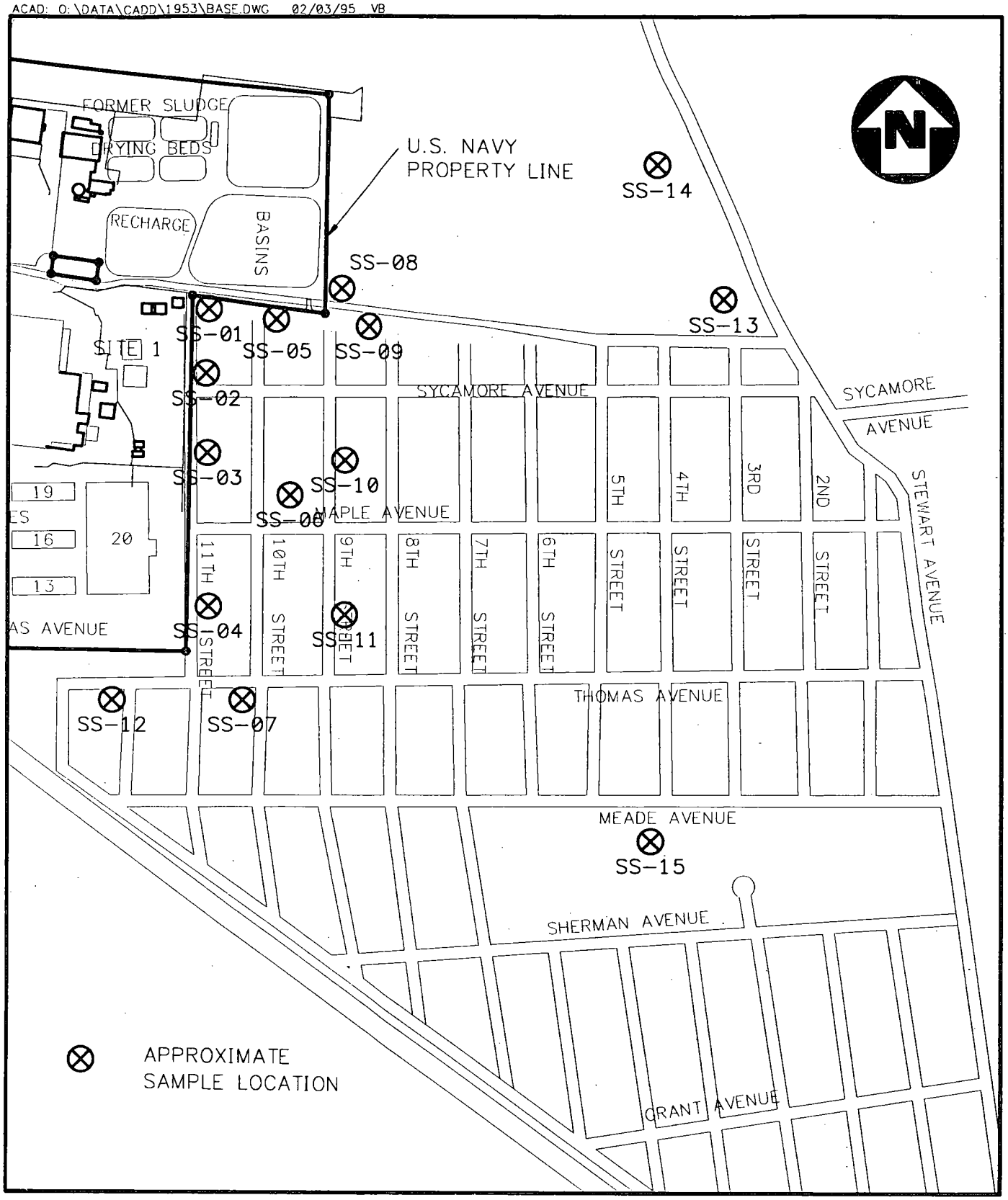
TABLE 1

OFFSITE SURFACE SOIL RESULTS - PCBs
NWIRP BETHPAGE, NEW YORK

Sample Identification	PCB Concentration (mg/kg)	Comments
SS-01	ND	Residential, 11th Street, front yard, facing Navy's Site 1.
SS-01-DU	ND	Duplicate of SS-01
SS-02	ND	Residential, 11th Street, front yard, facing Navy's Site 1.
SS-03	ND	Residential, 11th Street, front yard, facing Navy's Site 1.
SS-04	0.068J	Residential, 11th Street, front yard, facing Navy's southern warehouses, (southeast of Site 1).
SS-05	0.120J	Residential, 10th Street, front, back and side yards were sampled. House is adjacent to Navy's recharge basin.
SS-06	ND	Residential, 10th Street, back yard.
SS-07	ND	Residential, Thomas Avenue, front yard, southeast of Navy's property.
SS-08	3.52J	Industrial, property access road edge, near Navy's recharge basins and north end of 9th Street.
SS-09	ND	Residential, 8th Street, front and back yard.
SS-10	ND	Residential, 9th Street, front, side, and back yard.
SS-11	ND	Residential, 9th Street, front, side, and back yard.
SS-11-DU	ND	Residential (Duplicate of SS-11).
SS-12	ND	Residential, Thomas Avenue, front yard, south of Navy's warehouses and Site 1.
SS-13	5.0J	Industrial, property access road, open field near Bethpage Community Park and Stewart Avenue.
SS-14	0.169J	Bethpage Community Park, near basketball courts.
SS-15	ND	Playground, Meade Avenue, near swings.

ND - Not detected
J - Estimated

ACAD: O:\DATA\CADD\1953\BASE.DWG 02/03/95 VB



OFFSITE SOIL SAMPLING
NWIRP, BETHPAGE, NEW YORK

0 500 1000
SCALE IN FEET

FIGURE 1

Halliburton NUS
CORPORATION

ATTACHMENT 1

DATA VALIDATION LETTER

Halliburton NUS CORPORATION

INTERNAL CORRESPONDENCE

C-49-12-4-251

TO: DAVE BRAYACK **DATE:** JANUARY 13, 1995

FROM: ANNE K. BATTISTA **COPIES:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION-POLYCHLORINATED BIPHENYL ORGANIC COMPOUNDS
CTO 089, BETHPAGE, NEW YORK
SDG NO. SS01

SAMPLES: 17/Soil/

BP-OS-SS-01	BP-OS-SS-01-DU	BP-OS-SS-02
BP-OS-SS-03	BP-OS-SS-04	BP-OS-SS-05
BP-OS-SS-06	BP-OS-SS-07	BP-OS-SS-08
BP-OS-SS-09	BP-OS-SS-10	BP-OS-SS-11
BP-OS-SS-11-DU	BP-OS-SS-12	BP-OS-SS-13
BP-OS-SS-14	BP-OS-SS-15	

2/Aqueous/

BP-OS-SS-10-RB	BP-OS-SS-15-FB

INTRODUCTION

The sample set for the CTO 089, Bethpage, New York site, SDG SS01 consists of seventeen (17) solid environmental samples, one (1) rinsate blank (designated -RB) and one (1) field blank (designated -FB). All samples were analyzed for polychlorinated biphenyl (PCB) organic compounds. Two field duplicate pairs were included in this SDG (samples BP-OS-SS-01/BP-OS-SS-01-DU and BP-OS-SS-11/BP-OS-SS-11-DU).

The samples were collected by Halliburton NUS Corporation on November 16th and 17th, 1994 and analyzed by Recra Environmental, Incorporated. All analyses were conducted in accordance with Naval Energy and Environmental Support Activity (NEESA) Level D Quality Assurance/Quality Control (QA/QC) criteria, using Contract Laboratory Program (CLP) Statement of Work (SOW) OLM01.8 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial/continuing calibrations
* • Field and laboratory method blank results
  • Surrogate spike recoveries

* • Field Duplicate Precision
* • Compound identification
• Compound quantitation
* • System performance
* • Detection limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Documentation of compliance for these indicated parameters is provided in the attached Appendix C (Regional Worksheets).

Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix D. Qualified Analytical results are presented in Appendix A. Appendix B contains the results as reported by the laboratory and Appendix C contains the regional worksheets.

SUMMARY

PCB Organic Compound Analysis

Numerous samples were analyzed at dilutions due to high concentrations of non-target compounds. The non-target contamination was suspected to be a multicomponent pesticide and consequently, a sulfuric acid cleanup was performed on all samples. However, the acid cleanup did not remove all of the contamination and some samples required a further dilution. Samples BP-OS-SS-06, BP-OS-SS-07, BP-OS-SS-09 and BP-OS-SS-10 were analyzed at two different concentrations. Samples BP-OS-SS-06, BP-OS-SS-07 and BP-SO-SS-10 were analyzed at a 10 fold dilution and a 100 fold dilution. Sample BP-OS-SS-09 was analyzed at a 2 fold dilution and a 20 fold dilution. However, only one analysis for each sample was used for validation. Since the analyses with the lower dilution factors have lower reporting levels they were chosen for validation. Furthermore, upon subsequent dilution no positive results were reported in the aforementioned samples.

Several samples had noncompliant surrogate recoveries for decachlorobiphenyl (DCB) on one or both columns. However, no action was taken since Region II data validation protocol requires both surrogates to be noncompliant in order to take action.

The surrogate spike compounds decachlorobiphenyl (DCB) and tetrachloro-m-xylene (TCX) were diluted out in the following samples: BP-OS-SS-06DL, BP-OS-SS-07DL and BP-OS-SS-10DL. No action was taken based on Region II data validation protocol.

The Percent Differences (%Ds) noted in several samples exceeded the 25% quality control limit. Positive results in the interval of 25%

< x ≥ 50% were qualified as estimated, (J). The result for Aroclor 1248 in sample BP-OS-SS-13 was affected.

Positive results with %Ds in the interval of 50% < x ≥ 90% were qualified as estimated and presumptively present, (JN). The positive results in samples BP-OS-SS-08 and BP-OS-SS-13 for Aroclor 1254 were affected.

Positive results with %Ds exceeding 90% are typically qualified as rejected, (R), according to Region II protocol. However, after examination of the sample chromatograms, in the affected samples, it is the professional opinion of the data reviewer that based on pattern recognition, the Aroclors are present. As a result, samples with %Ds greater than 90% were qualified as presumptively present, (JN). Positive results in samples BP-OS-SS-04, BP-OS-SS-05 and BP-OS-SS-13 for Aroclor 1260 were affected. Aroclor 1254 was also qualified as presumptively present, (JN), in sample BP-OS-SS-14. It should be noted however, that the peak eluting at 14.91 minutes on column #2, for Aroclor 1254 in sample BP-OS-SS-14, is most likely an interferant. This peak was included in the quantitation of Aroclor 1254 and it is the primary contributor of the significant % D in analytical results. If this peak was eliminated from quantitation, the %D between analytical columns would be minimal. Variances in concentrations in the other aforementioned samples may also be the result of interfering compounds.

One of the peaks used to quantitate Aroclor 1260 in sample BP-OS-SS-04 was marginally outside the retention time window. No action was taken due to this marginal noncompliance.
The detection limits of the field blank BP-OS-SS-15FB are elevated by a factor of approximately 5, as a result of a sample extraction performed with a reduced volume.

It should be noted that the laboratory did not conduct a GC/MS confirmation for PCB verification. However, sample concentrations of PCBs were most likely below the detection limit of the mass spectrometer.

No other problems affecting data usability were noted.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Several PCB Aroclors had high %Ds due to large differences between positive results on columns 1 and 2. Some Aroclors also had %Ds greater than 90%. The laboratory failed to conduct a GC/MS confirmation for PCB verification.
Other Factors Affecting Data Quality: Several samples had noncompliant surrogate %Rs for decachlorobiphenyl.

MEMO TO: DAVE BRAYACK
DATE: JANUARY 13, 1995 - PAGE 4

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (1/92), as amended for use within EPA Region II, and the NEESA guidelines "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (20.2-047B, 6/88). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NEESA guidelines and the Quality Assurance Project Plan (QAPP)."

Anne K. Battista
Halliburton NUS Corporation

Anne K. Battista
Chemist/Data Validator

Halliburton NUS Corporation

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:			BP OS SS 01		BP OS SS O1 DU		BP OS SS 02		BP OS SS 03		BP OS SS 04	
LABORATORY ID:			B4044601		B4044602		B4044603		B4044604		B4044605	
TCL PCB SOILS (UG/KG)												
ANALYTE	CRQL	MDL										
AROCLOR 1016	33	2.8	190	U	190	U	200	U	310	U	38	U
AROCLOR 1221	67	3.8	390	U	390	U	400	U	630	U	78	U
AROCLOR 1232	33	3.8	190	U	190	U	200	U	310	U	38	U
AROCLOR 1242	33	3.8	190	U	190	U	200	U	310	U	38	U
AROCLOR 1248	33	4.5	190	U	190	U	200	U	310	U	38	J
AROCLOR 1254	33	4.2	190	U	190	U	200	U	310	U	38	U
AROCLOR 1260	33	5.6	190	U	190	U	200	U	310	U	30	JN
% SOLIDS:			87.0		87.0		84.0		85.0		86.0	
DILUTION FACTOR:			5.0		5.0		5.0		8.0		1.0	

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:			BP OS SS 05		BP OS SS 06		BP OS SS 07	
LABORATORY ID:			B4044606		B4044607		B4044608	
TCL PCB SOILS (UG/KG)								
ANALYTE	CRQL	MDL						
AROCLOR 1016	33	2.8	320	U	400	U	390	U
AROCLOR 1221	67	3.8	650	U	810	U	790	U
AROCLOR 1232	33	3.8	320	U	400	U	390	U
AROCLOR 1242	33	3.8	320	U	400	U	390	U
AROCLOR 1248	33	4.5	320	U	400	U	390	U
AROCLOR 1254	33	4.2	320	U	400	U	390	U
AROCLOR 1260	33	5.6	120	JN	400	U	390	U
% SOLIDS:			82.0		83.0		85.0	
DILUTION FACTOR:			8.0		10.0		10.0	

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:			BP OS SS 10 RB		BP OS SS 15 FB	
LABORATORY ID:			B4044701		B4044702	
TCL PCB WATERS (UG/L)						
ANALYTE	CRQL	MDL				
AROCLOR 1016	1.0	0.17	1.2	U	4.8	U
AROCLOR 1221	2.3	0.23	2.3	U	9.5	U
AROCLOR 1232	1.0	0.23	1.2	U	4.8	U
AROCLOR 1242	1.0	0.23	1.2	U	4.8	U
AROCLOR 1248	1.0	0.27	1.2	U	4.8	U
AROCLOR 1254	1.0	0.25	1.2	U	4.8	U
AROCLOR 1260	1.0	0.34	1.2	U	4.8	U
DILUTION FACTOR:			1.0		1.0	

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:			BP OS SS 12		BP OS SS 13		BP OS SS 14	
LABORATORY ID:			B4044615		B4044616		B4044617	
TCL PCB SOILS (UG/KG)								
ANALYTE	CRQL	MDL						
AROCLOR 1016	33	2.8	39	U	310	U	39	U
AROCLOR 1221	67	3.8	80	U	640	U	79	U
AROCLOR 1232	33	3.8	39	U	310	U	39	U
AROCLOR 1242	33	3.8	39	U	310	U	39	U
AROCLOR 1248	33	4.5	39	U	1900	J	120	
AROCLOR 1254	33	4.2	39	U	1500	JN	130	JN
AROCLOR 1260	33	5.6	39	U	1600	JN	49	
% SOLIDS:			84.0		84.0		85.0	
DILUTION FACTOR:			1.0		8.0		1.0	

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:			BP OS SS 08		BP OS SS 09		BP OS SS 10		BP OS SS 11		BP OS SS 11 DU	
LABORATORY ID:			B4044609		B4044610		B4044611		B4044612		B4044614	
TCL PCB SOILS (UG/KG)												
ANALYTE	CRQL	MDL										
AROCLOR 1016	33	2.8	180	U	77	U	400	U	42	U	41	U
AROCLOR 1221	67	3.8	360	U	160	U	810	U	86	U	84	U
AROCLOR 1232	33	3.8	180	U	77	U	400	U	42	U	41	U
AROCLOR 1242	33	3.8	180	U	77	U	400	U	42	U	41	U
AROCLOR 1248	33	4.5	1700		77	U	400	U	42	U	41	U
AROCLOR 1254	33	4.2	1600	JN	77	U	400	U	42	U	41	U
AROCLOR 1260	33	5.6	220		77	U	400	U	42	U	41	U
% SOLIDS:			92.0		86.0		83.0		78.0		80.0	
DILUTION FACTOR:			5.0		2.0		10.0		1.0		1.0	

CTO 089, NWIRP BETHPAGE, BETHPAGE, NEW YORK
RECRA ENVIRONMENTAL, INC.

CLIENT ID:	BP OS SS 15
LABORATORY ID:	B4044618

TCL PCB SOILS (UG/KG)

ANALYTE	CRQL	MDL		
AROCLOR 1016	33	2.8	37	U
AROCLOR 1221	67	3.8	75	U
AROCLOR 1232	33	3.8	37	U
AROCLOR 1242	33	3.8	37	U
AROCLOR 1248	33	4.5	37	U
AROCLOR 1254	33	4.2	37	U
AROCLOR 1260	33	5.6	37	U
% SOLIDS:			89.0	
DILUTION FACTOR:			1.0	